

ABSTRACT

The present invention provides a thermally and electrically conductive apparatus that can provide both thermal conductivity and electrical conductivity for one or more electronic devices connected thereto. The apparatus comprises a thermally conductive element that is in thermal contact with one or more electronic devices and optionally in contact with a heat dissipation system. A portion of the thermally conductive element is surrounded by a multilayer coating system comprising two or more layers. The multilayer coating system includes alternating electrically insulating and electrically conductive layers in order to provide paths for the supply of electric current to the one or more electronic devices. A conductive layer of the multilayer coating system may be selectively patterned to connect to one or more electronic devices. In this manner, the combination of an electronic circuit carrier and a thermally conductive element can unify thermal conductivity with the provision of power and/or communication into a single integrated unit for use with electronic devices.

15